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Swami Ramanand Teerth Marathwada University, Nanded

A Synopsis

"Effects of functional and plyometric training on jumping and shooting abilities on handball players"

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Effects of functional and plyometric training on jumping and shooting abilities on handball players

1. Introduction

1.1 Research Background:

Sprinting, flexibility, motor ability, throwing velocity and jumping ability signify physical activities are significant for team handball. The handball players are a thrower, sprinter, jumper all in one; and they should accomplish these skills with speed and precision. They frequently achieve shooting, dribbling skills and upper extremity passing, whereas wearing shoes on the flat stiff surfaces. The skills of the player need high joint accelerations from cutting maneuvers and jump landings. Plyometric exercises represent a natural segment of the most sport activities because they involve hopping, skipping and jumping i.e. like kicking, throwing or jumping. Plyometric training program has been advocated as a suitable technique for sports, which need vertical jumping ability and explosiveness improvement (Karadenizli, 2016).

Handball is a sporadic sport in which psychological features, especially the capacity to create and to replicate the volatile muscular contractions needed for jumping, changing pace, throwing a ball, sprinting and turning, which are significant to performance not only in adolescent players but also in adult players. Plyometric training program offers the needed stimuli and may improve volatile contractions in both prepubertal and pubertal populations. Such a course of therapy is likely to various sports, with its importance on throwing, skipping, hopping and jumping, and it is mainly suitable wherein there is a requirement to improve vertical jumping ability and volatile movements, as in the handball. Problems about the protection of plyometric training program for young athletes may be reduced through combining a suitable approach with a progressive training program as well as close care of participants (Chelly et al, 2014).

Vertical jump capability is significant for success in handball game. Jumping is used during the jump attack, jump shot from defending, attack line and blocking the opponent. A successful player should not only enable to attain that height rapidly but also enable to jump high. This needs a capability to create power in a short time. It is value signifying that some significant and

very general activities in handball namely, jumping as well as shooting over the opponent head into the target (Ghuman and Godara, 2013).

1.2 Problem statement:

There have been many problems like orthopaedic problems (ankle, back pathology or knee) or potential medical problems. Problems about the protection of plyometric training program for young athletes may be reduced through combining a suitable approach with a progressive training program as well as close care of participants. Also, many researchers have viewed that plyometric training program is the most generally used in distinctive speed force and explosive power development for various sport related activities, which need the incorporation of the greatest speed with highest force of muscle, in which this technique contribute in triumphing over or overcoming the issues that characterize force development (Benzidane, Bensikaddour and Mokrani, 2015). This is said by (Sofiane, 2011), that the plyometric training program contributes to the enhancement of attainment, particularly in activities that employ explosive muscular contractions; and plyometric training program in the short-term is more efficient to the growth of strength muscle and anaerobic capacity. Therefore, this research acts as a distinctive analysis that helps in determining the effects of functional and plyometric training on both jumping and shooting abilities on handball players.

1.3 Aims and objectives:

The main aim of this research is to determine the effects of functional and plyometric training program on jumping and shooting abilities on handball players.

The following are the objectives of this research:

i. To investigate the effects of functional and plyometric education training on physical fitness.
ii. To determine whether the replacement of short term plyometric training program for a few existing drills inside a standard handball training program would improve the jumping and shooting abilities of handball players.
iii. To examine the effects of a combined program including functional and plyometric training in the same session on handball players.

1.4 Significance of the study:

Plyometric training program has been offered as a suitable methodology for sports, which need vertical jumping ability, explosiveness and shooting ability improvement. In general, plyometric trainings are the most excellent way to offer speed or power to react directly during the game. Also, it is used to give the players to jump higher level and to enhance the jumping capacity of leg muscles. This program offers functional intensification of the tendon, ligaments and muscle particularly to the everyday demand sports and activities. This plyometric training program covers a learning practice requiring an efficient design as well as application with maximum care. That is the main motive why the significance of plyometric training program is overstated in this research.

2. Literature review

2.1 Existing studies:

Benzidane, Bensikaddour and Mokrani (2015) studied about the consequences of implying plyometric training program to enhance an athletic performance and physical capacity in the efficiency of long jump to students within the age 17 to 18 years old. In short time period, the plyometric training program is efficient to the growth of muscle power as well as contributes to the attainment of sports activities and physical education by volatile muscle contradictions. The findings of this research have confirmed that the efficiency of practicing plyometric exercises in sports lessons for students caused an enhancement in the digital attainment with the practical research sample.

Karadenizli (2016) discussed about the effects of plyometric program on some balance psychomotor features of handball team in school. It has been identified that findings of previous analyses concerned in physical education may be influenced in several conditions like sport branch, content, period, age and strength of exercises. Therefore, it must be cautious while organize and practice to plyometric training program due to physical education is a significant process. In this research, it is viewed that 10 week plyometric training program has positive impact on the flexibility, anaerobic power, standing long jump as well as left leg ellipse region at the fixed balance performance on the handball players. It has been evaluated that if the physical

education course program integrated plyometric training program in school, then all students may be gained from beneficial results of analyses.

Villarreal et al (2015) determined the effects of sprint and plyometric training program on technical and physical skill performance in soccer players. A particular combined sprint and plyometric training program inside regular soccer practice enhanced volatile actions than that of conventional soccer training alone. Hence, the short term combined program has a useful impact on volatile actions like jumping, ball-shooting speed, direction change and sprinting that are significant determinants of match winning activities in the soccer performance. Hence, the authors have proposed changes to present training technique for pubertal soccer players in order to integrate combined speed and plyometric training program for athlete training in this sport.

Cherif et al (2012) investigated the effect of a united training program with high intensity including speed and plyometric training program on the jumping and running abilities of handball players. Other united training program among vertical jump and sprint repetition in the similar training session has positive impact on the sprint ability and jumping ability of handball players. Though, this study has revealed that enhancements in physical traits are also feasible during 12 week period. But, it was not suitable to openly relate physical performance to the performance of handball team. Handball performance was identified by the players' tactical, technical, social or psychological and physiological characteristics and these factors are closely related to one other.

Slimani et al (2016) analyzed the consequences of plyometric training program on the physical fitness in the team sport athletes. The research findings have indicated that there was a higher effect of plyometric training program on jump only; as well as sprint performances than the mixture of plyometric training with strength or sprint training program. Additionally, provided the particular nature of the chosen training modality of plyometric training, their integration in the exercises practices of tactical and technical training was basic for elite and amateur team sport athletes. The achievements that were monitored must be of high interest for coaches and players as performance in these athletic team sports relies highly on particular sprinting, agility and power that were revealed to be considerably improved by various plyometric training

regimens. Hence, it was suggested that athletic team sport coaches execute in-season plyometric training to improve the athletes' performance.

2.2 Research gap:

There are different researchers and analyses that are paying attention on the effects of sprint and plyometric training program on technical and physical skill performance in the soccer players. After the estimation of previously conducted research, the research gap would be emphasized that will further need the significance of the study presently being continued. The researcher has discussed about the effects of plyometric program on some balance psychomotor features of handball team in school (Karadenizli, 2016). A research was carried out by (Villarreal et al, 2015) to determine the effects of sprint and plyometric training program on technical and physical skill performance in soccer players. The researchers have investigated the effect of a united training program with high intensity including speed and plyometric training program on the jumping and running abilities of handball players (Cherif et al, 2012). Slimani et al (2016) analyzed the consequences of plyometric training program on the physical fitness in the team sport athletes. However, there has been no other specific research that is focused on the effects of plyometric and functional training program on jumping and shooting abilities of handball players. Thus, this study aims to bridge the gap by investigating in detail about the effects of functional and plyometric training on jumping and shooting abilities of handball players.

2.3 Conceptual Framework and Hypothesis:

3. Research Methodology

3.1 Research Type:

This research undertakes ***positivism*** as a research paradigm. As a philosophy, positivism adheres to the view that only "factual" knowledge gained through observation (the senses), including measurement, is trustworthy. Positivism is supposed to have employed here since this study points out to examine a proposed hypothesis of the research by examining and collecting statistical data in the pattern of numbers and figures (Henning, Van Rensburg and Smit, 2004).

Hence, this research undergoes ***quantitative*** as a research approach. Quantitative research makes use of questionnaires, surveys and experiments to collect data that is revised and tabulated in numbers, which allows the data to be characterized by the use of statistical analysis. In quantitative research the role of the researcher is to measure and observe and care is taken to make the researchers from securing the data through personal involvement with the research subjects. The most popular research methods from this category are closed-ended questionnaires, experiments, correlation and regression analysis methods and others.

This study will be making use of the ***descriptive*** as a research design. Descriptive examination might be used when the reason for the examination is exceptionally multifaceted. Descriptive research is mainly performed when a researcher needs to have quantitative ideas of the variables under the analysis. It is very accurate and helpful it doesn't give the reasons for the predicting behind a condition as such. This analysis requires the distinct strategy since it will support to locate the detailed issue.

3.2 Sampling Technique:

Sampling strategy is the kind used to select significant respondents from the accessible tenants. This sampling technique is employed where the units are selected depends on easy access or availability. There are two types of sampling strategies include probability and non-probability sampling.

Among these two techniques, the present research adopts ***probability*** sampling technique. ***Simple random sampling*** technique is employed in this research. Simple random sampling (also referred to as random sampling) is the purest and the most straightforward probability sampling strategy. It is also the most popular method for choosing a sample among population for a wide range of purposes. A simple random sample is one in which each unit (e.g., persons, cases) in the accessible population has an equal chance of being included in the sample, and the probability of a unit being selected is not affected by the selection of other units from the accessible population (i.e., the selections are made independently) (Teddlie and Yu, 2007).

The sample of this quantitative research includes the target respondents are 30 handball players with age from 18 to 30 years. The data is gathered by distributing out the questionnaires to the respondents.

3.3 Data collection technique:

The process of gathering data and realities for the estimation is known as information gathering. This research would have used both ***primary*** and ***secondary*** data collection techniques.

In quantitative data analysis, it is expected to turn raw numbers into meaningful data through the application of rational and critical thinking. Quantitative data collection methods rely on structured data collection instruments that fit diverse experiences into predetermined response categories. Data analysis for quantitative studies involves critical analysis and interpretation of figures and numbers, and attempts to find rationale behind the emergence of main findings (Dudovskiy, 2016).

3.4 Validating strategies:

The research takes after the validity and reliability in the examination. Reliability relates to the consistency of a measure. A participant completing an instrument meant to measure motivation should have approximately the same responses each time the test is completed. Validity is defined as the extent to which a concept is accurately measured in a quantitative study (Heale and Twycross, 2015). The literature and questionnaire collected are very solid and the answers from the respondents are considerable or substantial. The collected data will be used only for this research purpose.

4. Limitations of the study:

The following are the limitations of this research:

i. The present research is limited to handball players.
ii. The study solely focuses on the effects of functional and plyometric training program on jumping and shooting abilities of handball players.
iii. This study is quantitative in nature.

iv. Due to limited time, only few participants were involved to carry out the primary investigation of the research.

5. Time Frame:

The following are entire research plan of the proposed research:

S.NO.	Research Plan	Mar - 2017.	Apr - 2017.	Jun - 2017.
1	Collecting the relevant materials for literature review			
2	Preparing the Literature Review			
3	Designing Research Methodology			
4	Data Collection			
5	Evaluating and Testing the Collected data			
6	Results and Discussion			
7	Final conclusion and Further Recommendations			

6. Expected outcome:

This research reviews the reason behind the functional and plyometric training program for handball players. There is possible opportunity for proving that the functional and plyometric training program provide the players to jump higher level in order to enhance the jumping capacity of leg muscles. Also, there is a chance for showing that these programs give shooting ability. More effectively, the research expectations can provide better outcomes for future

analysis. It will be interesting to find out the effects of functional and plyometric training program on jumping and shooting abilities of handball players.

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